Listing of the Claims:

1. (Amended) A device for writing and processing handwriting comprising:

a body;

a marking element for making strokes comprising a character on a surface, the marking element being coupled to the body;

a detector for detecting each stroke on the surface, and

a processor coupled to the detector, wherein the detector and processor are disposed within the body; and

wherein the detector comprises:

an array that includes at least one photo emitter and at least one photo detector;

wherein at least one photo emitter emits light towards the marking element to illuminate the strokes; and

wherein at least one photo detector (a) has a field of view that includes the marking element, (b) detects the strokes using the light reflected off the surface, (c) converts the detected strokes into electronic signals, and (d) sends the electronic signals to the processor; and

wherein the array is in the shape of a ring, with the center of the ring perpendicular to a z-axis that passes through a center of the marking element and is parallel to a major axis of the device.

2. (Amended) The device according to claim 1, further comprising an active feed-back mechanism, wherein the detector detects the strokes at a periodic rate which is adjusted based on input from the active feedback-mechanism.

3. (Original) The device of claim 1, wherein the processor identifies the character by combining the recognized strokes of the character and comparing the combined recognized strokes with a reference set of combined recognized strokes.

4. (Original) The device of claim 3, wherein the processor is comprised of a first sub-processor for characterizing each detected stroke as one in a set of reference strokes, and

a second sub-processor for identifying the character, the first and second sub-processors functioning asynchronously.

5. (Currently Amended) The device of claim 1, wherein the processor characterizes each detected stroke as one in a set of reference strokes by representing each detected stroke as a

polynomial representation, comparing the polynomial representation of each detected stroke with polynomial representations ~~as~~ of the reference strokes, and selecting for each detected stroke a reference stroke whose polynomial representation is sufficiently similar to the polynomial representation of the detected stroke.

6. (Original) The device of claim 1, wherein the processor characterizes each detected stroke as one in a set of reference strokes by representing each detected stroke as a vector representation, comparing the vector representation of each detected stroke with vector representations of the reference strokes, and selecting for each detected stroke a reference stroke whose vector representation is sufficiently similar to the vector representation of the detected stroke.

7. (Original) The device of claim 1 further comprising a character output mechanism for outputting a signal representing the character.

8. (Original) The device of claim 1, wherein the detector detects the strokes in the temporal order that the strokes are made.

Claims 9-18 (canceled).

19. (Amended) A device for writing and processing handwriting comprising:

a body;

a marking element for making strokes comprising a character on a surface, the marking element being coupled to the body;

a detector for detecting each stroke on the surface, and

a processor coupled to the detector, wherein the detector and processor are disposed within the body, wherein the detector comprises:

a photo emitter mounted on a first side of the device, wherein said photo emitter emits light towards the marking element to illuminate the strokes;

a first photo detector mounted on a second side of the device, wherein said first photo detector (a) has a first field of view that includes the marking element, (b) detects the strokes using the light reflected off the surface, (c) converts the detected strokes into electronic signals, and (d) sends the electronic signals to the processor; and

a second photo detector mounted on a third side of the device, wherein said second photo detector (a) has a second field of view that includes the marking element, (b) detects the strokes using the light reflected off the surface, (c) converts the detected strokes into electronic signals, and (d) sends the electronic signals to the processor.

20. (Original) The device according to claim 19, wherein the second side is opposite the third side.

21. (Original) The device according to claim 19, wherein the photo emitter, the first photo detector, and the second photo detector are mounted adjacent to the marking element.

22. (Original) The device according to claim 19, wherein the first photo detector and the second photo detector detect the strokes at a periodic rate which is adjusted based on input from an active feedback mechanism.

23. (Original) The device according to claim 19, wherein the light, the first field of view, and the second field of view are approximately centered upon the marking element.

24. (Original) The device according to claim 19, wherein the first field of view overlaps the second field of view.

25. (Original) The device according to claim 19, wherein the photo emitter emits constant light and the first photo detector and the second photo detector detect diffusely reflected light.

26. (Original) The device according to claim 19, wherein the photo emitter emits pulsed light and the first photo detector and the second photo detector detect spectrally reflected light.

27. (Amended) A device for writing and processing handwriting comprising:

a body;

a marking element for making strokes comprising a character on a surface, the marking element being coupled to the body;

a detector for detecting each stroke on the surface, and

a processor coupled to the detector, wherein the detector and processor are disposed within the body, wherein the detector comprises:

a multi-segment photo emitter mounted on the device, wherein said multi-

segment photo emitter emits light towards the marking element to illuminate the strokes;

a first photo detector mounted on a first side of the device, wherein said first photo detector (a) has a first field of view that includes the marking element, (b) detects the strokes using the light reflected off the surface, (c) converts the detected strokes into electronic signals, and (d) sends the electronic signals to the processor; and

a second photo detector mounted on a second side of the device, wherein said second photo detector (a) has a second field of view that includes the marking element, (b) detects the strokes using the light reflected off the surface, (c) converts the detected strokes into electronic signals, and (d) sends the electronic signals to the processor.

28. (Original) The device according to claim 27, wherein the multi-segment photo emitter is in the shape of a ring, with the center of the ring perpendicular to a z-axis that passes through a center of the marking element and is parallel to a major axis of the device.

29. (Original) The device according to claim 27, wherein the first side is opposite the second side.

30. (Original) The device according to claim 27, wherein the multi-segment photo emitter, the first photo detector, and the second photo detector are mounted adjacent to the marking element.

31. (Original) The device according to claim 27, wherein the first photo detector and the second photo detector detect the strokes at a periodic rate which is adjusted based on input from an active feedback mechanism.

32. (Original) The device according to claim 27, wherein the light, the first field of view, and the second field of view are approximately centered upon the marking element.

33. (Original) The device according the claim 27, wherein the first field of view overlaps the second field of view.

34. (Original) The device according to claim 27, wherein the multi-segment photo emitter emits constant light and the first photo detector and the second photo detector detect diffusely reflected light.

35. (Original) The device according to claim 27, wherein the multi-segment photo emitters emits pulsed light and the first photo detector and the second photo detector detect spectrally reflected light.

Claims 36-37 (canceled).

38. (Amended) The device according to claim 1, wherein the array contains a plurality of elements, each element being either a photo emitter or a photo detector.

39. (Original) The device according to claim 38, wherein each element is equally spaced within the array.

40. (Amended) The device according to claim 1, wherein the array is mounted adjacent to the marking element.

41. (Amended) The device according to claim 1, wherein at least one photo detector detects the strokes at a periodic rate which is adjusted based on input from an active feedback mechanism.

42. (Amended) The device according to claim 1, wherein the light and the field of view are approximately centered upon the marking element.

43. (Amended) The device according to claim 1, wherein each field of view overlaps at least one other field of view.

44. (Amended) The device according to claim 1, wherein at least one photo emitter emits constant light and at least one photo detector detects diffusely reflected light.

45. (Amended) The device according to claim 1, wherein at least one photo emitter emits pulsed light and at least one photo detector detects spectrally reflected light.

Claims 46-72 (canceled).

73. (Currently Amended) The device according to claim 1, wherein the detector detects quadrature elements using a feed-forward and feed-backward mechanism.

74. (Previously Presented) The device of claim 1, wherein the processor identifies the character by combining recognized quadrature elements of the character and comparing the combined recognized quadrature elements with a reference set of quadrature data.

75. (Previously Presented) The device of claim 1, wherein the processor identifies the character by comparing a recognized quadrature element with a reference set of

quadrature data.

76. (Previously Presented) The device of claim 3, wherein the processor comprises a first processor for characterizing each detected stroke as a quadrature element using a set of reference quadrature elements, and a second processor for identifying the character, the first and second processor functioning asynchronously.

77. (Previously Presented) The device of claim 1, wherein the processor characterizes each detected stroke as a quadrature element as one in a set of reference quadrature elements by representing each detected stroke as a quadrature element selected from the group consisting of: a basis vector, eigenvector, polynomial, Fast Fourier Transform function, and a combination of vector data and function translations.

Claims 78-80 (canceled).

81. (Previously Presented) The device of claim 1 further comprising a character storage mechanism for storing a signal representing the character.

Claims 82-84 (canceled).

85. (Previously Presented) The device according to claim 19, wherein the photo emitter emits constant light and the first photo detector and the second photo detector detect spectrally reflected light.

86. (Previously Presented) The device according to claim 19, wherein the photo emitter emits pulsed light and the first photo detector and the second photo detector detect diffusely reflected light.

87. (Previously Presented) The device according to claim 27, wherein the multi-segment photo emitter emits constant light and the first photo detector and the second photo detector detect spectrally reflected light.

88. (Previously Presented) The device according to claim 27, wherein the multi-segment photo emitters emits pulsed light and the first photo detector and the second photo detector detect diffusely reflected light.

89. (Previously Presented) The device according to claim ~~36~~1, wherein at least one photo emitter emits constant light and at least one photo detector detects spectrally reflected light.

90. (Previously Presented) The device according to claim ~~36~~1, wherein at least one photo emitter emits pulsed light and at least one photo detector detects diffusely reflected light.

Claims 91-96 (canceled).

97. (Previously Presented) The device according to claim 19, further comprising an active feed-back mechanism, wherein the detector detects the strokes at a periodic rate which is adjusted based on input from the active feedback-mechanism.

98. (Previously Presented) The device according to claim 27, further comprising an active feed-back mechanism, wherein the detector detects the strokes at a periodic rate which is adjusted based on input from the active feedback-mechanism.

99. (Previously Presented) The device of claim 19, wherein the processor identifies the character by combining the recognized strokes of the character and comparing the combined recognized strokes with a reference set of combined recognized strokes.

100. (Previously Presented) The device of claim 27, wherein the processor identifies the character by combining the recognized strokes of the character and comparing the combined recognized strokes with a reference set of combined recognized strokes.

101. (Previously Presented) The device of claim 99, wherein the processor is comprised of a first sub-processor for characterizing each detected stroke as one in a set of reference strokes, and a second sub-processor for identifying the character, the first and second sub-processors functioning asynchronously.

102. (Previously Presented) The device of claim 100, wherein the processor is comprised of a first sub-processor for characterizing each detected stroke as one in a set of reference strokes, and a second sub-processor for identifying the character, the first and second sub-processors functioning asynchronously.

103. (Currently Amended) The device of claim 19, wherein the processor characterizes each detected stroke as one in a set of reference strokes by representing each detected stroke as a polynomial representation, comparing the polynomial representation of each detected stroke with polynomial representations ~~as~~ of the reference strokes, and selecting for each detected stroke a reference stroke whose polynomial representation is sufficiently similar to the polynomial representation of the detected stroke.

104. (Currently Amended) The device of claim 27, wherein the processor characterizes each detected stroke as one in a set of reference strokes by representing each detected stroke as a polynomial representation, comparing the polynomial representation of each detected stroke with polynomial representations ~~as~~ of the reference strokes, and selecting for each detected stroke a reference stroke whose polynomial representation is sufficiently similar to the polynomial representation of the detected stroke.

105. (Previously Presented) The device of claim 19, wherein the processor characterizes each detected stroke as one in a set of reference strokes by representing each detected stroke as a vector representation, comparing the vector representation of each detected stroke with vector representations of the reference strokes, and selecting for each detected stroke a reference stroke whose vector representation is sufficiently similar to the vector representation of the detected stroke.

106. (Previously Presented) The device of claim 27, wherein the processor characterizes each detected stroke as one in a set of reference strokes by representing each detected stroke as a vector representation, comparing the vector representation of each detected stroke with vector representations of the reference strokes, and selecting for each detected stroke a reference stroke whose vector representation is sufficiently similar to the vector representation of the detected stroke.

107. (Previously Presented) The device of claim 19 further comprising a character output mechanism for outputting a signal representing the character.

108. (Previously Presented) The device of claim 27 further comprising a character output mechanism for outputting a signal representing the character.

109. (Previously Presented) The device of claim 19, wherein the detector detects the strokes in the temporal order that the strokes are made.

110. (Previously Presented) The device of claim 27, wherein the detector detects the strokes in the temporal order that the strokes are made.

111. (Previously Presented) The device according to claim 19, wherein the detector detects quadrature_elements using a feed-forward and feed-backward mechanism.

112. (Previously Presented) The device according to claim 27, wherein the detector detects quadrature_elements using a feed-forward and feed-backward mechanism.

113. (Previously Presented) The device of claim 19, wherein the processor identifies the character by combining recognized quadrature elements of the character and comparing the combined recognized quadrature elements with a reference set of quadrature data.

114. (Previously Presented) The device of claim 27, wherein the processor identifies the character by combining recognized quadrature elements of the character and comparing the combined recognized quadrature elements with a reference set of quadrature data.

115. (Previously Presented) The device of claim 19, wherein the processor identifies the character by comparing a recognized quadrature element with a reference set of quadrature data.

116. (Previously Presented) The device of claim 27, wherein the processor identifies the character by comparing a recognized quadrature element with a reference set of quadrature data.

117. (Previously Presented) The device of claim 99, wherein the processor comprises a first processor for characterizing each detected stroke as a quadrature element using a set of reference quadrature elements, and a second processor for identifying the character, the first and second processor functioning asynchronously.

118. (Previously Presented) The device of claim 100, wherein the processor comprises a first processor for characterizing each detected stroke as a quadrature element using a set of reference quadrature elements, and a second processor for identifying the character, the first and second processor functioning asynchronously.

119. (Previously Presented) The device of claim 19, wherein the processor characterizes each detected stroke as a quadrature element as one in a set of reference

quadrature elements by representing each detected stroke as a quadrature element selected from the group consisting of: a basis vector, eigenvector, polynomial, Fast Fourier Transform function, and a combination of vector data and function translations.

120. (Previously Presented) The device of claim 27, wherein the processor characterizes each detected stroke as a quadrature element as one in a set of reference quadrature elements by representing each detected stroke as a quadrature element selected from the group consisting of: a basis vector, eigenvector, polynomial, Fast Fourier Transform function, and a combination of vector data and function translations.

121. (Previously Presented) The device of claim 19 further comprising a character storage mechanism for storing a signal representing the character.

122. (Previously Presented) The device of claim 27 further comprising a character storage mechanism for storing a signal representing the character.